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REINFORCED PACKAGING FOR PRODUCTS WHICH MIGHT FLOW

The present invention relates to packaging devices. More particularly, the invention relates to a device for packaging products, which, since they do not take the form of a single solid block, may flow. These products may for example be in paste, granular or liquid form.

5 Numerous devices for packaging products of this kind are known. The main types used may be classified into two main families:

- rigid devices (food tins, bottles, canisters, drinks cans etc). Devices of this type are very widely used but have the drawback of having, when they are emptied of their contents, the same space requirement as when they are full. Moreover, the 10 cost price of these devices, which are often made of steel or of aluminium, is relatively high,
- flexible devices (pouches in particular), generally formed by the sealed jointing (for example by welding) of two flexible sheets based on a plastic material. Pouches of this kind are commonly used for example for packaging food (animal 15 food, cocktail biscuits) or liquids (washing up liquid particularly). Depending on the nature of the product to be packaged, the composition of the pouch sheets may vary: for example, to package animal food which must be preserved from infiltration from the outer atmosphere, these sheets are made by inserting a layer of a sealing material (such as aluminium) between two layers of plastic material which provide the 20 mechanical strength of the pouch. The outer surface of these pouches is generally printed in order to display information presenting and promoting the product.

Among the types of packaging devices mentioned above pouches constitute a simple and cost-effective packaging, which additionally has the advantage of having a small space requirement once emptied of its contents, which is advantageous from 25 the practical point of view.

However, pouches also comprise some drawbacks:

- firstly, once the pouch is open, generally by cutting off its upper part (by means of scissors, or by hand along lines of weakening of the pouches provided for that purpose), the flexibility of the sheets constituting the pouch may make it difficult 30 to manipulate. In particular, it may be tricky to keep the pouch open and to dispense its contents properly, the two opposing sheets tending to become twisted,
- secondly, the flexibility of the pouch means that it tends to collapse onto itself, which complicates the storage and presentation of these pouches, particularly on the shelves of shops where an advantageous presentation of the product is 35 required,

• thirdly, in some cases the user may experience in a negative way too "direct" a contact of the hand with the contents of the pouch (in particular in the case of animal food which may comprise solid pieces embedded in a fluid or viscose mixture),

5 • fourthly, the graphic printing on the external surface of the pouch often requires substantial printing machine setup time, which increases the unit cost price of the pouches,

- Lastly, known devices generally comprise only a single pouch.

The aim of the invention is to make it possible to produce packaging using a
10 pouch, freed from the drawbacks cited above which are inherent in known pouches.

In fulfilment of this aim, the invention proposes a device for packaging products which might flow, including at least one flexible pouch which is of a generally flattened shape and which has two opposing walls in sheet form extending approximately parallel to a longitudinal median plane of the device, a device
15 characterized in that it consists of:

- at least one flexible pouch,
- two reinforcement elements respectively associated with two respective pouch walls, said reinforcement elements extending at least approximately opposite each other all the way across their associated pouch wall,
- 20 • and means for fixing each reinforcement element to its associated pouch wall at least in a median area of the wall,

the two reinforcement elements extending on either side of the device, approximately symmetrically relative to said longitudinal median plane and the rigidity of said reinforcement elements being greater than that of the walls of the
25 pouch or pouches in order to make it easier, after the two respective lateral ends of each of said reinforcement elements have been moved closer together in said median plane so as to distort these reinforcement elements such that their respective median parts move away from each other, to open the pouch or pouches once its (their) upper part(s) is (are) torn.

30 Preferred but non-restrictive aspects of the device according to the invention are as follows:

- the device comprises a single pouch the two walls of which are associated with the two respective reinforcement elements,
- the device comprises at least two pouches arranged one after the other so
35 that the walls of the pouches are aligned along a direction at least approximately perpendicular to said median plane, and the walls of two adjacent pouches of the unit are fixed together by means such as one or more lines of adhesive,

- projections in the longitudinal median plane of the device of the lateral edges of the pouches are offset relative to each other,
- the pouches are of different widths,
- the means for fixing each reinforcement element to its associated pouch wall also fix together integrally the reinforcement element and its associated wall in the vicinity of its lateral edges,
- the means for fixing each reinforcement element to its associated pouch wall include bonding the reinforcement element of said wall,
- the reinforcement elements and the pouch walls are bonded together at discrete bonding points,
- the reinforcement elements and the pouch walls are bonded together by at least one continuous adhesive strip deposited between each reinforcement element and its associated wall,
- said at least one continuous adhesive strip extends approximately all the way across said wall,
- the means for fixing each reinforcement element to its associated pouch wall include adjustments to the wall, which can comprise folds or excess thicknesses,
- the lateral ends of the reinforcement elements are connected so as to surround the lateral edges of the pouch or pouches,
- the lateral ends of the reinforcement elements are not connected,
- the lower ends of the reinforcement elements are connected by a base located under the pouch or pouches,
- the reinforcement elements extend all the way up the pouch or pouches,
- the upper ends of the reinforcement elements are connected by a top covering the pouch or pouches,
- the reinforcement elements include means which engage so as to re-cover the top of the pouch or pouches once their upper parts have been torn, in order to close the device,
- said covering means of the pouch or pouches include a tab made from the same material as one of the reinforcement elements, to engage with a slot of the other reinforcement element,
- the reinforcement elements are printed on both their faces,
- the reinforcement elements are made of cardboard,
- at least one reinforcement element includes a tear line along a desired path for opening the device, extending opposite the means for fixing the pouch walls to the reinforcement elements so as to guide the user in tearing the pouch walls,
- each pouch comprises means to weaken its walls, located at the same level as the tear line of the reinforcement elements,

- the weakening points of the pouch walls are provided by notches on its lateral edges,
 - said means for fixing adjacent pouch walls are located opposite the tear lines of the reinforcement elements,
- 5 - the means for fixing the pouch walls to the reinforcement elements include two lines of adhesive between each reinforcement element and its associated wall, said lines of adhesive being located on either side of the tear line of the reinforcement element,
- each pouch of the unit contains a different product,
 - 10 - distortion of the reinforcement elements is obtained by arching these elements,
 - distortion of the reinforcement elements is obtained by folding these elements.

15 Other aspects, aims and advantages of the invention will become clearer from reading the following description of preferred embodiments of the invention, given by way of example and with reference to the appended drawings in which:

- figures 1a and 1b are respectively a longitudinal transverse cross-section view and a side view of a first embodiment of the invention,
- figures 2a and 2b are two diagrammatic views from above of the device in figures 1a and 1b, shown in two respective operating positions,
- figures 3a and 3b are two diagrammatic views from above of packaging devices according to the invention according to two different embodiments,
- figures 4a to 4c are three longitudinal transverse cross-section views of three embodiment variants of the invention, able to be implemented with any one of the two embodiments shown in figures 3a and 3b,
- figures 5a and 5b are a side view and a perspective view of a packaging device according to the invention including a flexible pouch reinforced by elements having an attractive visual appearance,
- figures 6a to 6d are four front views of the device in figures 5a and 5b according to an embodiment variant including reclosure means of the device,
- figure 7a is an elevation view of a device according to the invention comprising easy opening means,
- figures 7b and 7c are respectively a diagrammatic representation of the upper part of the device in figure 7a, and a view in partial vertical transverse cross-section of this device,
- figures 8a and 8b are two views according to two different perspectives of an embodiment of the invention including two flexible pouches,

- figure 8c is a diagrammatic representation of the upper part of the device in figures 8a and 8b,
- figures 8d and 8e are respectively a horizontal cross-section view and a partial vertical transverse cross-section view of the device in figures 8a and 8b.

5 Prior to this description, in reference to the devices described below the vertical direction is defined as corresponding to the longitudinal direction of greatest elongation of the devices, and the horizontal plane as being the plane orthogonal to this vertical direction.

10 With reference to figure 1a, a pouch 10 has been shown containing a product such as, for example and in a non-restrictive way, food (for example for animals) or else washing up liquid. This pouch is constituted by joining two flexible sheets 11 and 12 welded edge to edge, for example by ultrasonic sealing. This type of pouch may be of a known type and will not be described in a further detail. Conventionally, the longitudinal median plane of the device is defined as P (which in this 15 embodiment, in which the device includes only one single pouch, also corresponds to the longitudinal median plane of the pouch 10).

According to the invention, two reinforcement elements 21 and 22 are bonded onto the two opposing faces of the pouch, one opposite the other. These reinforcement elements are made of a relatively rigid material but having sufficient 20 flexibility to be able to be distorted by the hand of a user; the reinforcement elements 21 and 22 may for example be made of cardboard.

In the embodiments shown in the drawings, each reinforcement element 21 or 22 is made in the form of a sheet (of cardboard or the like) comprising no specific 25 adjustment to guide its distortion after its two lateral ends are moved closer together by the hand of a user, such that this distortion corresponds to an arching of the reinforcement element.

It is however also possible to provide in each reinforcement element a weakening and/or fold line of (for example approximately vertical) such that after its 30 two lateral ends have been moved closer together, each reinforcement element is folded in two like an articulated flap, the median parts of the two reinforcement elements still separating from each other in this case.

The reinforcement elements 21 and 22 extend as shown in figure 1b all the way across the pouch, and extend beyond it on both sides.

As shown in figures 2a and 2b (in which the upper end of the pouch has been 35 torn in order to provide access to its content), a user may, by acting upon the ends of the reinforcement elements 21 and 22 in order to move them closer together, distort these flexible reinforcement elements by arching them and separating their respective

median parts. In the interests of clarity, the hand of the user is only shown in figure 2a.

The two opposing walls 11, 12 of the pouch being bonded respectively to the two reinforcement elements 21 and 22 in their median area, this separation causes a controlled opening of the pouch, after its upper end has been torn. It is then possible to handle the packaging device reliably, and in particular to dispense the contained product effectively.

It is important to note here that the reinforcement elements 21 and 22 may be bonded onto the pouch walls by a continuous adhesive strip covering all or part of the width of the pouch wall, or by the application at discrete places of bonding points (for example by depositing on each pouch wall a bonding point in its middle, surrounded by two lateral bonding points). In every circumstance, it is important according to the invention for at least the median area of each pouch wall to be bonded to the associated reinforcement element.

Additionally, each reinforcement element will to advantage be bonded to its associated pouch wall also at the level of the two lateral edges of the pouch, in order to increase the coherence of the unit and to make it even easier to open the pouch.

Bonding the two reinforcement elements 21 and 22 onto the opposing walls of the pouch means that handling and using the pouch is made reliable.

A material will preferably be selected for these reinforcement elements 21 and 22 which has sufficient resilience for these reinforcement elements after several opening manipulations to resume naturally their original shape corresponding to figure 2a.

Figure 3a shows a diagrammatic view from above of a pouch 10 surrounded by two reinforcement elements 21 and 22 which are bonded to it; in this figure, it will be noted that the two reinforcement elements 21 and 22 are disconnected, whereas in figure 3b which is a similar representation of an alternative embodiment, the ends of the two reinforcement elements 21 and 22 are joined together. It is thus possible to associate with the pouch reinforcement elements 21 and 22 in the form of two different flexible strips, or else of a single sleeve surrounding the pouch without discontinuity.

Figures 4a to 4c show three embodiment variants, able to be implemented with each of the two embodiments shown in figures 3a and 3b.

In figure 4a, the lower ends of the reinforcement elements 21 and 22 are located underneath the pouch and are joined together by a horizontal base 23 made of the same material as these reinforcement elements. This embodiment variant makes it possible to equip the device with a stable base and so to overcome the drawback of pouch instability mentioned in the introduction to this text.

It will also be noted that the fact of covering the pouch surface all the way up with the semi-rigid frame formed by the reinforcement elements 21 and 22 makes it possible to offer to the hand of the user a "smoother" contact than that of the "crude" pouch, which may be required for some products.

5 In figure 4b, the reinforcement elements 21 and 22 extend all the way up the pouch, but their lower ends are disconnected: this variant corresponds to the case where the pouch is simply "sandwiched" between two flexible sides (embodiment in figure 3a), or surrounded by a sheath open at its two ends, and to the walls of which the pouch is bonded (embodiment in figure 3b).

10 In figure 4c, the two reinforcement elements 21 and 22 have disconnected lower ends but their upper end is covered by a part 24 made from the same material.

It is possible according to the invention to completely surround the pouch with a carton comprising a base and a top.

15 It is also possible to provide in the reinforcement elements 21 and 22 folds, bellows or cuts in order to make possible the manipulation described with reference to figures 2a and 2b even in the presence of a relatively rigid base and/or top.

20 The main function of the reinforcement elements 21 and 22 is, as has been said, to allow the pouch to be opened reliably. These elements also have the advantage of being able to be used as a graphic surface to display information about the product or promotional data.

25 In this respect, it will be noted that printing on a material such as cardboard requires an appreciably smaller amount of machine adjustment time compared with the synthetic films which usually constitute known pouches; it is thus possible, in particular where the reinforcement elements 21 and 22 extend all the way up the pouch, not to print on the pouch wall, but only on the reinforcement elements which surround it. It will additionally be noted that it is possible to print on both faces of each reinforcement element 21 and 22, which considerably increases the graphically usable service of the device.

Figures 5a and 5b show a packaging device according to the invention, corresponding to the configurations in figures 3b and 4b (lateral ends of the reinforcement elements joined together at least at points and lower ends of these reinforcement elements joined together by a base). It will be noted that the reinforcement elements have here been cut so as to have a characteristic appearance (cat head); in the event this is a device containing cat food. Each of the two upper corners of the reinforcement element (which corresponds to a cat ear) is bonded to the corner of the reinforcement element located opposite, to increase the rigidity of the device.

It will be noted in these figures that it is possible to incorporate between the base of the carton and the pouch an element such as an advertisement or promotional item 30. It will also be noted that the fact, in this variant, of not completely closing the pouch reinforcement structure allows the user to touch the pouch directly and to 5 feel tactiley the contained product; depending on the nature of the product and the required marketing positioning, it will thus be possible to choose a reinforcement structure which is more or less open, in order to allow more or less direct access to the product.

Figures 6a to 6d are four views of the pouch in figures 5a and 5b once the top 10 of the pouch has been cut.

In figure 6a, it will be seen that a part of the element 21 has itself been cut out so as to constitute a tab 210 able to be set upright and folded back over the top of the pouch, and to be engaged in a slot 220 of the opposing reinforcement element 22 (figure 6b). According to the embodiment shown, in particular in figure 6a, it will be 15 seen that by cutting out the tab 210 in the element 21 an opening 211 has been defined to facilitate the manipulation of the tab.

Figures 6c and 6d show the two faces of the device once the tab is engaged in the slot. This arrangement makes it possible to re-close the pouch when only a part of its content has been dispensed.

It will be noted that the packaging device according to the invention may be made in different sizes; in particular it is possible to provide large dimensional devices which are manipulated with both hands so as to separate the two reinforcement elements and open the pouch (application for example to dog food packaging).

To advantage according to the invention, it is possible to provide on each of the reinforcement elements a pre-cut tear line, given the reference L in figure 7a to 7c, at the same height as the bonding of these reinforcement elements 21' and 22' on the pouch.

Preferably in this case adhesive will be deposited between each reinforcement 30 element and its associated pouch face along two continuous lines C which appear in figures 7b and 7c, and which extend approximately from one lateral edge to the other of their associated pouch face, parallel to their associated tear line L, said tear line being inserted along the vertical direction between the two lines of adhesive C.

In this case, the pouch is opened by tearing off the upper part of the reinforcement elements 21' and 22' (and possibly the top connecting these reinforcement elements), opening the pouch 10 itself at the same time.

According to the invention, tearing the upper part of the pouch is thus made easier and more reliable, by bonding to advantage the pouch walls to the support elements at the same height as the tear lines of the reinforcement elements.

Indeed, this arrangement makes it possible to guide the tearing of the pouch
5 by hand and so to make opening the device more reliable.

As was said at the beginning of this text, known pouches may include opening means such as a weakening line (which might be made for example by laser beam etching of the pouch sheet so as to reduce its thickness).

It will be noted that according to the invention two notches may be simply
10 provided located on the opposing edges of the pouch, at the same height as the weakening lines of the reinforcement elements and as the bonding of the pouch onto these elements.

Such notches E are shown in figure 7b, in which the upper parts of each reinforcement element 21' and 22' have been shown diagrammatically with their
15 weakening line L surrounded by their two lines of adhesive C.

This arrangement thus makes it possible to remove one stage in the process of manufacturing the device (such as a stage of etching the pouch walls by laser beam), which allows the pouch cost price to be reduced.

It should also be noted that the two lines of adhesive C constitute a "channel"
20 which frames the desired place for tearing the walls of the pouch and thus plays a part in guiding this tearing, the two lines of adhesive constituting obstacles to the tear lines of the pouch walls.

The design of the device according to the invention may also be adapted in such a way that tear lines of the reinforcement elements defining the path for opening
25 the device are adapted to the selected application: indeed it will thus be possible to have a rectilinear opening path but also a curvilinear one, or even a path according to any required design.

It is obvious that according to the invention it is possible to fix each reinforcement element 21, 22 to its associated pouch face by any known means other
30 than bonding; for example the reinforcement elements might be engaged in adjustments (which might for example include pouch wall parts extending beyond welded edges of said pouch and folded back on themselves, or again excess thicknesses associated with an opening for the reinforcement elements to pass through) of the pouch walls, or else these elements might be welded together.

35 Referring now to figures 8a to 8e, one particular embodiment of the invention has been shown in which the device contains not one but two pouches 10 and 10'.

As shown particularly in figures 8c and 8e, in this embodiment of the invention the two pouches 10 and 10' are bonded together by two lines of adhesive

C' which approximately cover the lateral extent of the surface on which the two pouches are opposite one another. In figures 8d and 8e has also been shown the longitudinal median plane P of the device, the pouches being aligned approximately perpendicular to this plane.

5 Each pouch furthermore is bonded to a reinforcement element (element 21' for the pouch 10', 22' for the pouch 10) by two lines of adhesive C similar to those in figure 7c, and which here again frame a tear line L of the reinforcement element. The reinforcement elements are, as in the case of the device with a single pouch, arranged symmetrically relative to the plane P (in other words opposite each other, and at the
10 same height).

It will be noted that in order to facilitate opening the pouches, simultaneously to the tearing of the upper parts of the reinforcement elements 21' and 22', the lateral edges of the two pouches 10 and 10' are not opposite one another, but on the contrary that their projections in the longitudinal median plane of the device are
15 offset (see in particular figures 8a and 8d).

Thus, when opening the device only a single edge of the pouch is attacked at one and the same time. Pouches of different width are also conceivable (as shown in figures 8a and 8d particularly) in order again to facilitate opening.

It will additionally be noted that here again the lateral edges of the pouches
20 comprise notches E located opposite the tear lines of the reinforcement elements, in order to make opening the device reliable.

This second embodiment makes it possible to package in a single device products with different characteristics. It will be possible for example in an application for packaging human food to fill one of the pouches with pieces of meat
25 with or without sauce, while the other pouch contains rice or accompanying vegetables. Thus the possibility is offered of providing the consumer with several products, constituting a combination dish, in a same device.

It is understood that the embodiment in figures 8a to 8e, which includes two pouches (and which may also include according to this embodiment of the invention
30 any number of them) has among others the following advantages:

- it makes it possible to serve at one and the same time at least two products, each product being packaged in a separate pouch, the two products being able to have different characteristics and/or functions. It may also be possible to conceive of incorporating into the two respective pouches food with different tastes (for example
35 ravioli and parmesan cheese respectively), different textures (for example in a first pouch meats cooked in sauce and steamed vegetables or cereals; and in a general way wet products in one pouch, and dry products in the other pouch), or even two different functions (one pouch being able to contain a food such as a complete

cooked dish, the other pouch being able to contain a product such as a medicine). And in a more general way, the two (or more) pouches may contain products or chemical compounds to be mixed before use,

- additionally, each product packaged separately in a pouch may retain its intrinsic characteristics before the pouch is opened and the respective products, which it contains, are mixed together. In this respect, it will be noted that it is also possible to subject a pouch containing a specific product and having already been re-closed to different treatments (sterilization, preservation treatments etc), and to join this first pouch to a second pouch not having been subjected to the same treatment so as to constitute a device such as shown in figures 8a to 8e,
 - such a device is also practical since it allows the different pouches it includes to be opened at one of the same time (and from this point of view offsetting the ends of the lateral edges of the pouch is particularly advantageous),
 - this device also has a high degree of safety, since it allows the manufacturer to incorporate in the different pouches the exact quantities of product which are to be mixed together, and to adapt these quantities as a function of the pouch batches to be associated,
 - lastly, such a device is also advantageous in terms of presentation since it allows the respective products contained in the respective pouches side by side to be dispensed into a same receptacle if it is decided to dispense these products through the lateral edge of the pouches, and it is also possible to dispense these products forming superposed layers in the receptacle receiving the content of the pouches by the products dispensing on the contrary through the middle of the lateral faces of the superposed pouches.
- It is thus possible depending on opening to conceive of any number of pouches aligned in series and bonded together in twos by their adjacent walls, preferably at the same height as notches of their lateral edges, surrounded by two reinforcement elements also bonded (or fixed to the pouches by any other known means), the reinforcement elements being able to comprise tear lines. The reinforcement elements may also in this case not comprise tear lines, the pouches then being able to be equipped with opening means such as weakening lines made by laser etching.
- Clearly, the characteristics described with reference to figures 1a to 6d (devices comprising a single pouch) also apply to devices with two or more pouches: lateral edges of the reinforcement elements joined or disconnected, bottom and/or top to join the two reinforcement elements together, closure tab etc.